UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,246	08/28/2003	Frank Athari	IR-2311 (2-3643)	7190

2352 7590 06/26/2008

OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER	
RUTLAND WALLIS, MICHAEL	
ART UNIT	PAPER NUMBER
2836	
MAIL DATE	DELIVERY MODE
06/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/650,246
Filing Date: August 28, 2003
Appellant(s): ATHARI, FRANK

Louis C. Dujmich

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/20/2008 appealing from the Office action mailed 12/21/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,636,107	Pelly	2-2004
6,700,806	Kolar	3-2004
5,731,689	Sato	3-1998
6,067,243	Suzuki et al.	3-2000
5,668,464	Ohkawa et al.	5,321,299

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 3-6 and 8-13 are rejected under 35 U.S.C. 103(a) as being anticipated by Pelly (U.S. Pat. No. 6,636,107) in view of Kolar (U.S. Pat. No. 6,700,806)

With respect to claims 5-6, 8 and 9 Pelly teaches a circuit arrangement comprising a switching stage (i.e. switching circuitry contained within item 40 in Fig. 3) providing an output voltage and an active EMI filter (circuitry connected between terminals A,D and B,F in Fig. 3) having first and second input terminals (terminals A and B) and first and second output terminals (terminals B and F) and a ground return line (item 43) connected to a ground return line terminal (item 43a), the input terminals of the active EMI filter being connected to receive the output voltage of the power transistor switching stage (40) and the output terminals of the active EMI filter providing a filtered output voltage (via outputs B and F), wherein the power transistor switching stage is a switch mode power supply (i.e. AC input is rectified to DC) and the active EMI filter cancels common mode current (filtering of common mode current is described throughout see for example col. 2 line 55-60 or col. 6 lines 60-65) that flows between the input terminals (terminals A and B) and the output terminals (terminals B and F), substantially eliminating any current due to the common mode current in the ground return line (43) connected to the ground return line terminal (43a). Pelly does not illustrate at the use of a transistor based switching stage arranged at the input. Kolar

teaches (col. 2 lines 30-50) power transistors may be arranged as means to control the voltage conversion. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Pelly to use power transistors in order to reduce the output voltage.

With respect to claim 10 Pelly teaches the active EMI filter comprises a current transformer (see windings 44-46) having first and second primary windings and first and second secondary windings, the first primary winding being connected between the first input terminal (terminals A and B) and the first output terminal (terminals B and F) and the second primary winding being connected between the second input terminal and the second output terminal.

With respect to claim 11 Pelly teaches a load (motor) connected to the first and second output terminals (terminals B and F) and the ground, wherein when a common mode noise current flows between the load and the ground, a common mode current flowing between the input and output terminals will flow in the primaries and a differential mode current (see Fig. 23) is canceled, the common mode current being reflected additively in the secondary winding and a normal mode current being canceled by polarization of the primaries.

With respect to claims 12 and 4 Pelly teaches the active EMI filter comprises two complementary PNP and NPN transistors (Q1 and Q2), only one of the transistors being conductive depending upon a direction of a current in the secondary winding; and an isolating capacitor (item 47).

With respect to claim 13 Pelly teaches one of the two transistors is turned ON to allow a current generated in one of the secondary winding (44) to flow through the isolating capacitor (47) to cancel a ground noise current flowing in the ground line (43), thereby canceling the ground noise current flowing back to the input, the transistors being turned ON depending on a flow of the common mode current.

With respect to claim 3 Pelly teaches the active EMI filter comprises an amplifier (item 70) stage having two transistors (Q1 and Q2) each controlled by a current sensor (windings of current sensing transformer), the current sensor sensing the presence of a common mode current to a load (motor) connected to the active EMI filter, each of said two transistors (Q1 and Q2) having a first terminal coupled at a common connection (E) to an isolating capacitor (47) coupled to a ground line (43), the isolating capacitor (47) passing a current to cancel the common mode current in said ground line each of said two transistors further having a second (see connection from point E leading to terminal at item 44) terminal coupled to a control terminal (see connected at winding output) via a secondary winding (44).

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelly (U.S. Pat. No. 6,690,230) in view of Sato (U.S. Pat. No. 5,731,689)

With respect to claims 7-8 Pelly teaches a circuit arrangement comprising a power stage providing an AC output voltage (Fig. 2 AC input) and an active EMI filter (item 11) having first ($L1_{IN}$) and second input ($L2_{IN}$) terminals and first ($L1_{OUT}$) and second ($L2_{OUT}$) output terminals and a ground return line (G) connected to a ground return line terminal (GND), the input terminals of the active EMI filter being connected to

receive the output voltage of the power transistor switching stage and the output terminals of the active EMI filter providing a filtered output voltage, wherein the power stage is a AC power supply (AC line) and the active EMI filter cancels common mode current (paragraph 0022) that flows between the input terminals and the output terminals, substantially eliminating (paragraph 0022-0023) any current due to the common mode current in the ground return line connected to the ground return line terminal. Pelly does not teach the use of a power transistor switching stage to output the AC output voltage. Sato teaches a control system wherein a power transistor switching stage is provided to provide an AC power output from a DC power source. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Pelly to use a power transistor switching stage which is a switch mode power supply in order to provide a filter voltage from a battery supply.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelly (U.S. Pat. No. 6, 690,230) in view of Sato (U.S. Pat. No. 5,731,689) in further view of Suzuki et al. (U.S. Pat. No. 6,067,243)

With respect to claim 2 Pelly as modified above teaches the power transistor switching stage comprises an output stage comprising a capacitor with the output voltage provided across the capacitor. Pelly does not teach the use of an inductor in the output stage. Suzuki teaches (Fig. 1 item 1) the use of an input filter connected at the output of the power transistor switching stage. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Pelly to include the use of an inductor in order to filter output voltage.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelly (U.S. Pat. No. 6,636,107) in view of Kolar (U.S. Pat. No. 6,700,806) in further view of Ohkawa et al. (U.S. Pat. No. 5,668,464)

With respect to claim 2 Pelly as modified above teaches a power transistor switching stage comprises an output stage however does teach the use of an inductor and a capacitor connected thereto. Ohkawa teaches the use of an inductor (18) and capacitor (36) connected at the power output stage. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Pelly to include the use of an inductor and capacitor connected at the power output stage in order to provide a smoothed power signal to the filter.

(10) Response to Argument

Appellant argues with respect to claim 8 a diode full bridge rectifier is not analogous to the claimed power transistor switching stage.

In response, Appellant cites the power transistor switching stage is a switch mode power supply (claim 8, line 8). The full bridge rectifier of Pelly, while not transistor based, provides a switch mode conversion of an alternating current mode input to a direct current mode output. Further, transistors and diodes are both semiconductor switches; the diodes serve an analogous function to the power transistor switching stage of switching the power mode from alternating current to direct current. Therefore, the power transistor switch mode power supply and a full bridge rectifier are analogous.

Appellant secondly argues there is nothing in the prior art which teaches or suggests providing the active EMI filter at the output of a power transistor switching stage.

In response, Pelly teaches a switch mode power supply with an active EMI filter at the output. The arrangement in Pelly comprises a diode full bridge rectifier for switching an alternating current input to a direct current output. Kolar discloses in Fig. 1 the use of transistors in switching an alternating current input to a direct current output (see controllable bridge item 3 comprising transistors item 12). Kolar also discloses (col. 2 lines 30-50) that the capability to control the conduction state (control provided by the use of transistors) of the bridge may be used to reduce the output voltage of the system when compared to conventional diode rectification (such as the arrangement seen

Pelly) and can reduce power supply system reactions. Accordingly, it remains the position of the examiner that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the circuit of Pelly and use transistors in the power switching stage as taught by Kolar in order to reduce the output voltage.

Appellant next argues there is no motivation for the cited combination of Pelly and Kolar and the outcome of the combination does not have a reasonable expectation of success.

In response, the motivation cited in the Final rejection is found in col. 2, lines 30-40 of Kolar, where it is disclosed that the use of transistors in a switch mode supply may be used to reduce power supply reaction. It is the examiner's position that a person having ordinary skill in the art at the time of the invention would have found it obvious to substitute transistors as taught by Kolar for the conventional diode bridge of Pelly, since Kolar discloses that transistor switches are advantageous when compared to a diode bridge rectification arrangement. Therefore, there is a reasonable expectation of success when combining the teachings of Pelly and Kolar.

Appellant lastly argues that there is no motivation for the cited combination of Pelly and Sato and the outcome of the combination does not have a reasonable expectation of success.

In response, Sato teaches the use of transistors (items 19a-19f, col. 11 line 10) to control the power conversion (item 18 voltage regulator) of a switch mode power supply, similar to the diode rectification switch mode supply seen in Pelly. Sato discloses (col. 12 lines 15-20) MOS transistors may be sequentially operated to switch

the mode of the power supply. Sato teaches the transistors may be controlled (via item 20) such that the output voltage is maintained at target level (col. 12 lines 1-5). It is the examiner's position that a person having ordinary skill in the art at the time of the invention would have found it obvious to substitute transistors as taught by Sato for the conventional diode bridge of Pelly, in order to insure the voltage is maintained at a target level (col. 12 lines 1-5). Therefore, there is a reasonable expectation of success when combining the teachings of Pelly and Sato.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Michael Rutland-Wallis/

Examiner, Art Unit 2836

/Michael J Sherry/

Supervisory Patent Examiner, Art Unit 2836

Conferees:

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

Drew A. Dunn
/D. A. D./
TQAS, TC 2800